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BRIEFER ARTICLES.

NOTES ON SOME AMERICAN TREES.

Fraxinus catawbiensis, n. sp.—A large tree 20–35^m in height, with a cylindrical or gently tapering trunk often 7^{dm} in diameter, and straight ascending branches forming an oval crown; the gray-brown bark on the trunk deeply furrowed, the ridges flat-topped and frequently anastomosing, that of the branches brown and smoother. Twigs stout, somewhat flattened and quadrangular between the nodes, about 5^{mm} thick, the first season dark brown and velvety with a close pubescence, becoming gray-brown and glabrate the second year, and marked with a few small pale gray lenticels; the winter-buds dark brown, scurfy, short and blunt; leaf-scars large, lunate or semi-orbicular. The leaves (2–3^{dm} long) borne on stout spreading velvety-pubescent petioles, consist of 7–9 drooping leaflets which are oblong-ovate, 7–10^{cm} long, 4–5^{cm} wide, rounded or subcordate at base, taper-pointed at the apex, usually entire, thick and firm in texture, dark green and glabrous on the upper surface, white and glaucous beneath, with brown pubescence on the midrib and primary veins; petiole short, velvety-pubescent. The flowers appear in the vicinity of Raleigh, N. C., from the first to the middle of April. The fruit, which is borne in loose pendent clusters, is about 3^{cm} long, the cylindrical brown body about 1^{cm} long and 3^{mm} thick, the narrow ligulate wing about 4^{mm} wide; ripens and falls in October; calyx glabrous, scarcely 1^{mm} long, sharply toothed.

The Catawba ash frequents the alluvial river banks of the Piedmont region of the Carolinas, growing with the black birch, red maple, sweet gum, the white and green ashes, and the bitternut hickory; and is not uncommon in the vicinity of Raleigh, N. C., at an altitude of 110^m, and Marion, N. C., along the Catawba river and its tributaries, at an altitude of 400^m. It is closely related to the white ash, from which it is separated by the darker foliage, glaucous white beneath, the soft pubescence of the twigs and petiole, and the darker winter-buds; while from *Fraxinus biltmoreana* and *F. profunda*, which it closely resembles in foliage and pubescence, it is separated by the shorter and smaller fruit and smaller calyx.

TILIA HETEROPHYLLA Vent.—The northern limit of this species is usually given in the mountains of Pennsylvania; this being the limit

assigned by Professor Sargent in his *Sylva*, and in the sixth edition of Gray's *Manual*, and in Britton and Brown's *Flora of the Northern States*. In 1892 the writer collected specimens of a linden from Fall creek, near Ithaca, N. Y., and in 1897 similar specimens from near Watkins glen, New York, which are undoubtedly from the white linden, having its close silvery pubescence on the lower surface of the leaves, and the subglobose fruit covered with short cinereous tomentum, characters common to no other species of the eastern United States.

Tilia eburnea, n. sp.—A tree 10-22^m in height, with dark gray-brown furrowed bark on the trunk, and smoother silver-gray bark on the branches. Twigs stout, 5-6^{mm} thick, soft, glabrous, occasionally sparingly glaucous, those of the season bright green, brown or red-brown, becoming gray the second year; buds large, ovate, glabrous, sometimes glaucous. The leaves are ovate or round-ovate, 8-14^{cm} long, 7-12^{cm} wide, abruptly acuminate at the apex, obliquely cordate or truncate at the entire base, sharply serrate, thick, dark green and glabrous above, densely pubescent beneath with soft white hairs which are sometimes deciduous by autumn; petioles and primary veins glabrous, often glaucous. The pedunculate bract is 10-12^{cm} long, oblong or spatulate, rounded at the apex, rounded or acute at base, sessile or nearly so, glabrate above, often soft-pubescent beneath. The flowers, which appear about the middle of June, are smaller than those of *Tilia heterophylla*, and the sepals and peduncles more pubescent than in that species. The ovary and young fruit are densely pubescent with short brown hairs; the mature fruit is 5-7^{mm} thick, globular or somewhat thicker than long, and not pointed.

From *Tilia heterophylla*, which it much resembles and with which it is often associated, *Tilia eburnea* is separated by the softer and looser pubescence on its foliage, its smaller flowers, somewhat earlier time of flowering, and the coarse brown tomentum of the ovary and fruit which is in strong contrast to the very close cinereous pubescence that clothes the fruit of *T. heterophylla*. From *T. pubescens* it is distinguished by having larger flowers, glabrous twigs, larger and broader foliage which is white (not gray or brown) pubescent beneath.

Tilia eburnea is found from middle North Carolina to northern Georgia between 200^m and 700^m elevation, on rich moist soil near small streams or on steep cool slopes. It is usually associated with the red oak, red maple, white ash, and yellow poplar, but is nowhere a common tree. In the cool hollows of the Blue ridge in North and South Carolina it occurs with the white linden and another related species which seems to be undescribed.

Crataegus cibilis, n. sp.—A tree 4–6^m in height, with a short unarmed trunk having dark gray nearly black scaly bark, and numerous long spreading branches forming a globose crown. Twigs soon glabrous, thick, soft, russet or red-brown, straight or nearly so, armed with very few short thorns 2–3^{em} long. Leaves thin, on the upper surface bright green and glabrous except on the midrib, on the lower somewhat paler and sparingly pubescent, especially on the veins; the blades ovate deltoid or nearly orbicular, 7–9^{em} long, 5–8^{em} wide, rounded or truncate at the usually entire base, subacute or obtuse at the apex, sharply doubly serrate and with 2–4 pairs of short notches above the middle; petiole slender, one-half the length of the blade, villous. Inflorescence a nearly simple 4–8-flowered cyme; pedicels slender, erect, villous, the lower elongated. The flowers, which appear at Hot springs, North Carolina, early in May or the last of April, when the leaves are about half grown, are 20–24^{em} wide; calyx large, cup-shaped, glabrous, the elongated ligulate or narrowly triangular sharply serrate lobes spreading or ascending after anthesis; stamens 20, anthers nearly white. The fruit, borne in nearly simple clusters, on long spreading or drooping nearly glabrous pedicels, and falling with the pedicels attached before or with the leaves in October, is depressed globose, 12–15^{mm} thick and not quite so long, concave at the base, full and rounded at the apex, dark red, capped by the large ascending calyx lobes; the cavity broad and deep; flesh thick, firm, yellow, sweet; seeds usually 5.7–8^{em} long, lateral faces nearly plane, grooved on the narrow back.

The species above proposed is related to *Crataegus altrix*, proposed below, from which it is separated by the differently shaped foliage, and larger glabrous ascending calyx lobes. It occurs on the banks of the French Broad river in Madison county, North Carolina, and Indian creek, Unicoi county, Tennessee.

Crataegus altrix, n. sp.—Arborescent, 5–7^m in height, with a short usually unarmed trunk 1–2^{dm} thick, dividing above into numerous horizontal or spreading sparingly armed branches which form a globose or flattened crown; the bark on the trunk dark brown and broken by shallow furrows into narrow ridges, that on the branches light gray and smoother. Twigs brown, stout, glabrous, or nearly so, soft and brittle, somewhat geniculate, armed with few short (2–3^{em}) thorns. Leaves ample, dark green and nearly glabrous above, more or less soft-pubescent on the lower surface, the blades ovate or broadly ovate,

7-13^{cm} long, 5-11^{cm} wide, rounded or truncate at the serrate base, acute or obtuse at the apex, sharply and coarsely serrate or doubly serrate, with a pair of prominent notches at the base, and often less conspicuous notches above, 6-8 pairs of prominent veins, the lowest pair spreading; petiole terete or nearly so, at first pubescent, at length nearly glabrous. Inflorescence a several-flowered somewhat compound cyme; pedicels strict, erect, at first pubescent, soon glabrate; calyx large, cup-shaped, soon glabrate, the oblong glabrate serrate or nearly entire lobes reflexed after anthesis and often deciduous before the fruit falls; flowers about 20^{mm} wide; stamens 20; anthers white; styles 4-5. The fruit, which falls in September or October before the leaves, borne in simple, few-fruited clusters on nodding or declined pedicels, is glabrous, globose, 13-18^{mm} thick, bright glossy red, sparingly glaucous, and often capped by the persistent reflexed lobes; flesh thick, deep yellow, very sweet; seeds 4-5, nearly central in the fruit, 6-7^{mm} long, somewhat grooved on the narrow back, the lateral faces plane.

The type material was collected by the writer along streams and in pastures in northern Illinois. *Crataegus altrix* is evidently related to *C. canadensis* Sarg., but has much larger foliage and fruit. It is more closely related perhaps to *C. cibilis*, above proposed, of the southern Appalachians.

Crataegus obtecta, n. sp.—A tree 3-5^m in height, with a short usually unarmed trunk covered with dark gray or nearly black rough or scaly bark, and with long spreading branches which form a round or flat-topped crown. Twigs at first villous with matted gray hairs, at length glabrate, thick, soft, russet-brown, straight or nearly so, armed with few short thorns. Leaves thin for the group even when mature, above dull green and at first pubescent, but soon glabrate, beneath soft pubescent; the blades ovate in outline, 7-12^{cm} long, 6-9^{cm} wide, rounded or broadly cuneate at the entire base, acuminate at the apex, sharply and coarsely doubly serrate, seldom notched; petiole slender, villous. Inflorescence a nearly simple 5-10-flowered villous cyme; the flowers, which appear in northern Illinois from the 1st to the 10th of May (early for the group) when the leaves are about half grown, are about 2^{cm} wide; calyx large, obconic, villous, the elongated triangular lobes pubescent, sharply glandular, serrate, spreading after anthesis; stamens 20, anthers white. The fruit, borne in usually simple clusters on long spreading villous or nearly glabrous pedicels, is pyriform 12-15^{mm} thick, dark red, glabrate except at the apex, capped by the

large ascending nearly sessile calyx-lobes; cavity broad and deep; flesh thick, yellow, very sweet; seeds usually 5, 6-8^{mm} long, grooved on the back, the lateral faces nearly plane.

The species above proposed is related to *C. mollis*, from which it is separated by the different outline of the leaf, with its very sharp serratures, more simple inflorescence, somewhat later period of flowering, and larger erect calyx-lobes. The fruit matures early in October and falls early.—W. W. ASHE, *Raleigh, N. C.*

BLACK ROT OF ORANGES.

A FUNGOUS disease of navel oranges has attracted attention in the orange-growing districts of California for the past eight or ten years, and was named black rot by the writer on account of the color of the diseased tissues. The losses due to this disease will run from 3 to 10 per cent. of the navel crop, and as the cultivation of the navel variety in the state is extensive the total losses are proportionately heavy.

Oranges are attacked through the navel, the fungus hyphae entering cracks or other imperfections of the peel of those parts. The cells of the pulp sacks are destroyed, and soon become black in color and bitter to the taste. The peel is left uninjured until the disease has made considerable progress within, but finally becomes thin and darkened in color over the affected parts. The fungus vegetates freely among the pulp sacks, which are wholly destroyed as far as the mycelium extends, but this destruction of tissue rarely involves more than one-fourth of the fruit, and is commonly confined to the tissues lying near to and at one side of the navel. Infected fruit ripens prematurely, showing an exceptionally high color, and soon falls from the tree.

The fungus inducing this disease is a new species of *Alternaria*, and its conidia are produced upon the surface of the affected tissues. The life cycle has been studied by means of single spore cultures, and detailed descriptions and illustrations are reserved for publication, together with facts relative to preventive treatment. The following specific characterization may be accredited to Ellis and Pierce.

***Alternaria citri*, n. sp.**—In oranges in California. Effused, olivaceous, becoming nearly black. Mycelium abundant, loosely interwoven, gray, consisting of slender, septate, yellowish or olivaceous-hyaline threads, penetrating and overrunning the matrix, much